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| 10/814,319 | 03/31/2004 | Xinhua Gu | IMRAA.025A | 5170 |

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| EXAMINER |
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VAN ROY, TOD THOMAS

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| ART UNIT | PAPER NUMBER |
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2828

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| NOTIFICATION DATE | DELIVERY MODE |
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06/18/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
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| | | | |
|------------------------------|--------------------------------------|----------------------------------|--|
| Office Action Summary | Application No. 10/814,319 | Applicant(s) GU ET AL. | |
| | Examiner TOD T. VAN ROY | Art Unit 2828 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 20 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,9-41 and 55-76 is/are pending in the application.
4a) Of the above claim(s) 6,17,18,24,26,31-41 and 55-74 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 42-54 is/are allowed.
- 6) ☒ Claim(s) 1,9,11-16,19-21,23,27,28,30,75 and 76 is/are rejected.
- 7) ☒ Claim(s) 2-5,10,22,25 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>02/24/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The Examiner acknowledges the amending of claims 19 and 27.

Response to Arguments

Applicant's arguments, see Remarks filed 02/20/2009 with respect to the claims have been fully considered and are persuasive. The rejection of the claims has been withdrawn.

The Examiner notes that the arguments filed with respect to claims 1, 9, and 12, as well as the amendments to claims 19 and 27 overcome the previously made art rejections.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 9, 11, 19, 27, 28, 30, and 75-76 are rejected under 35 U.S.C. 102(e) as being anticipated by Fermann et al. (US 6885683)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome

either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

With respect to claim 1, Fermann discloses an amplification system for outputting pulses having a duration and width comprising: a modelocked fiber oscillator outputting optical pulses (fig.1 #1), an amplifier (fig.1 #3) optically connected to said modelocked fiber oscillator to receive said optical pulses, said amplifier comprising a gain medium that imparts gain to said optical pulses (inherent), and a variable attenuator (fig.1 #2) disposed between said modelocked fiber oscillator and said amplifier, said variable attenuator configured to receive said optical pulses from said mode-locked fiber oscillator prior to reaching said amplifier and having an adjustable transmission such that the amplitude of said optical pulses that are coupled from said modelocked fiber oscillator to said amplifier can be reduced (function of a stretcher), and a compressor to compress the pulse to reduce the pulse width (fig.1 #4), said compressor receiving amplified pulses from said amplifier, wherein said amplifier is configured such that attenuating said amplitude of the optical pulses coupled from said modelocked fiber oscillator to said amplifier reduces the pulse width at an output of said compressor (function of the compressor to reduce pulse width), wherein the amplifier, variable attenuator, and compressor are external to the fiber oscillator.

With respect to claim 9, Fermann discloses method of producing compressed laser pulses comprising, substantially modelocking (fig.1 #1) longitudinal modes of a laser cavity to repetitively produce a laser pulse, amplifying said laser pulse (fig.1 #3),

chirping said laser pulse thereby changing the optical frequency of said optical pulse over time (inherent due to dispersive property of optical fibers), compressing said laser pulse by propagating different optical frequency components of said laser pulse differently to produce compressed laser pulses having a shortened temporal duration (fig.1 #4), and selectively attenuating the amplitude of said laser pulse (fig.1 #2, col.9 line 4-49, adjustable) prior to said amplifying of said laser pulse to further shorten said duration of said compressed laser pulses, wherein the amplifier, variable attenuator, and compressor are external to the fiber oscillator.

With respect to claim 11, Fermann discloses maintaining the polarization of the pulse after amplification (col.7 lines 6-7, note fig.10 #46 fiber after amp before compressor).

With respect to claim 19, Fermann discloses that described in the rejection to claim 1 above, and including the use of a spectral filter (fig.9 #39) disposed to receive said optical output of said modelocked fiber oscillator prior to reaching said amplifier, said spectral filter having a spectral transmission with a band edge that overlaps said spectral power distribution of said optical output of said modelocked fiber oscillator to attenuate a portion of said spectral power distribution and thereby reduce the spectral bandwidth (col.12 lines 29-31), the pulse width of said optical pulses coupled from said modelocked fiber oscillator to said fiber amplifier thereby being reduced, wherein the amplifier and filter are external to the fiber oscillator and the filter is between the oscillator and amplifier, and additionally that the filter reduces the spectral bandwidth to less than about 12nm (col.12 line 43, input to amplifier from filter is 3-8nm).

With respect to claims 27-28 and 20, Fermann discloses the method of producing the optical pulses as outlined in the rejection to claim 19 above (see also claim 1 for the external components).

With respect to claims 75-76, Fermann discloses a dispersive element that shortens the duration of said optical pulses (fiber stretcher).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 14-16, 20-21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fermann.

With respect to claim 14, Fermann teaches the system outlined in the rejection to claims 9 and 12, but does not teach the specified attenuation, power, or duration values. It would have been obvious to adjust the system of Lin to obtain the stated values as a

matter of routine optimization by one of ordinary skill in the art (see MPEP 2144.05 II A - “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235(CCPA 1955)).

With respect to claims 15-16, Fermann teaches the variable attenuator control outlined in the rejection to claim 12 above, but does not teach the control to be specifically based on either a power or pulse duration measurement. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the attenuator control of Lin with pulse duration or power measurement feedback in order to effect control over the system output as a whole.

Fermann does not disclose the particular bandpass grating filters claimed in claims 20-21, and 23. However these filters are well known in the art. The particular filter type used in Fermann does not appear critical to the operation of the device, therefore it would have been obvious to one skilled in the art to substitute the known filter into the system of Fermann by an obvious engineering design choice.

Allowable Subject Matter

Claims 2-5, 10, 22, 25, and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 42-54 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TOD T. VAN ROY whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tod T Van Roy/
Examiner, Art Unit 2828

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